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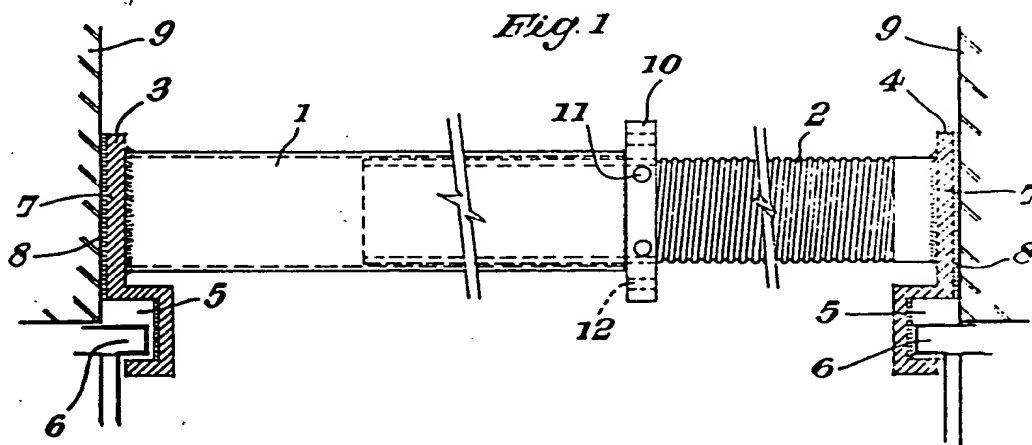
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## (54) Safety devices

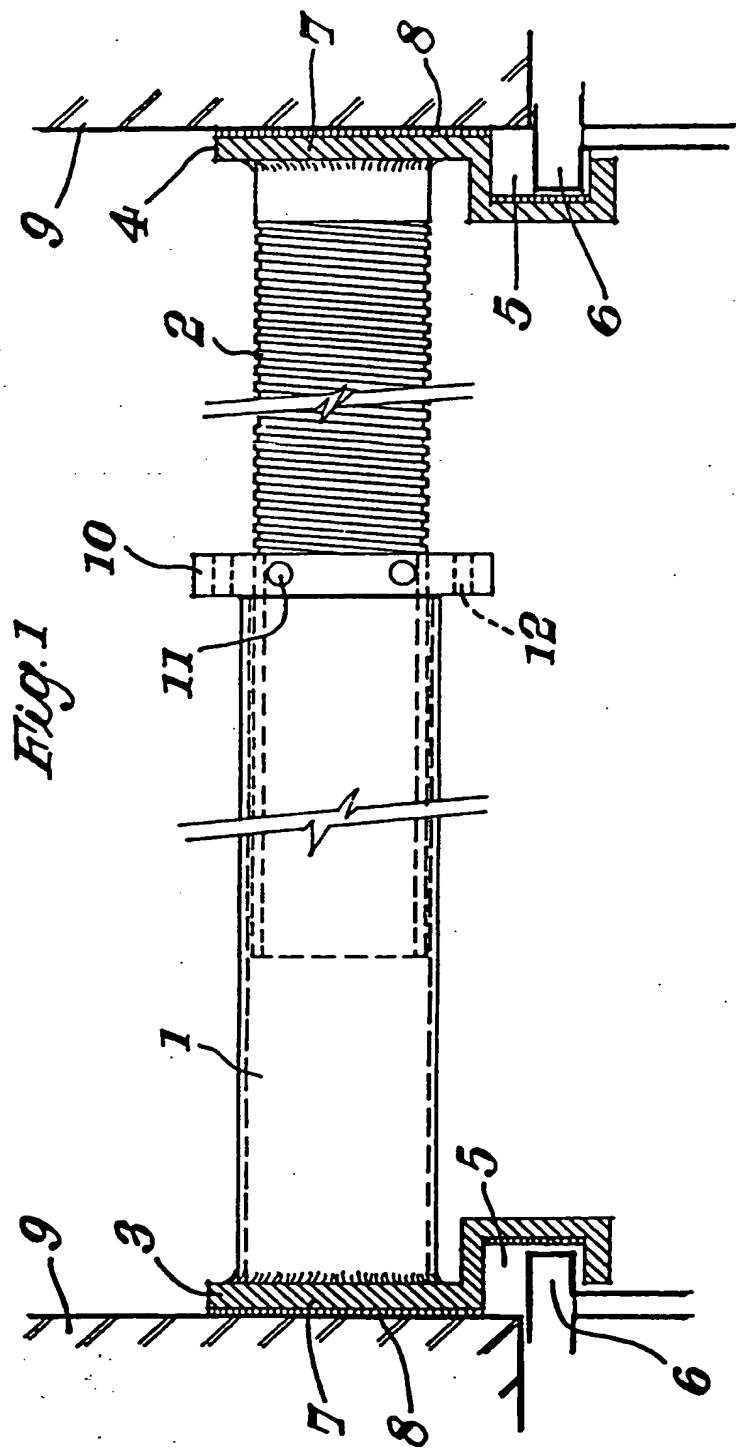
(57) The invention relates to safety devices and provides a safety device for use by a window cleaner or other workman who needs to perform an operation on the exterior of a building in the vicinity of an upstairs' window. The invention consists in a safety device comprising a jack having a tubular member (1) with a wall-engaging foot (3) at one end thereof. The tubular member has an opening at the other end to receive a length of threaded rod (2). A foot (4) similar to the foot (3) is welded to the outer end

of the threaded rod (2). The threaded rod (2) is dimensioned to slide within the tubular member (1) and has on it an internally threaded annular member (11). Each of the feet (3) and (4) is shaped to form a recess (5) designed to accommodate the external beads (6) of a sash window frame.

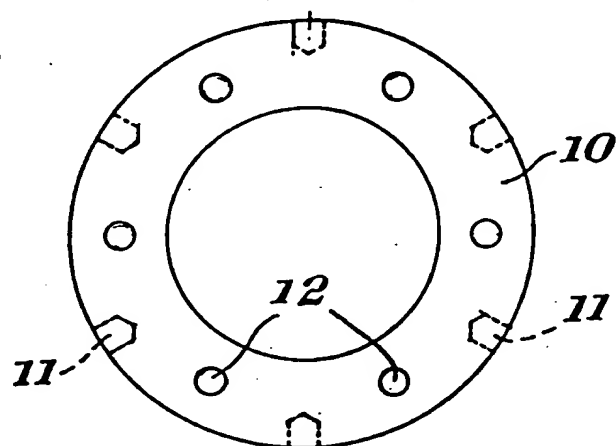
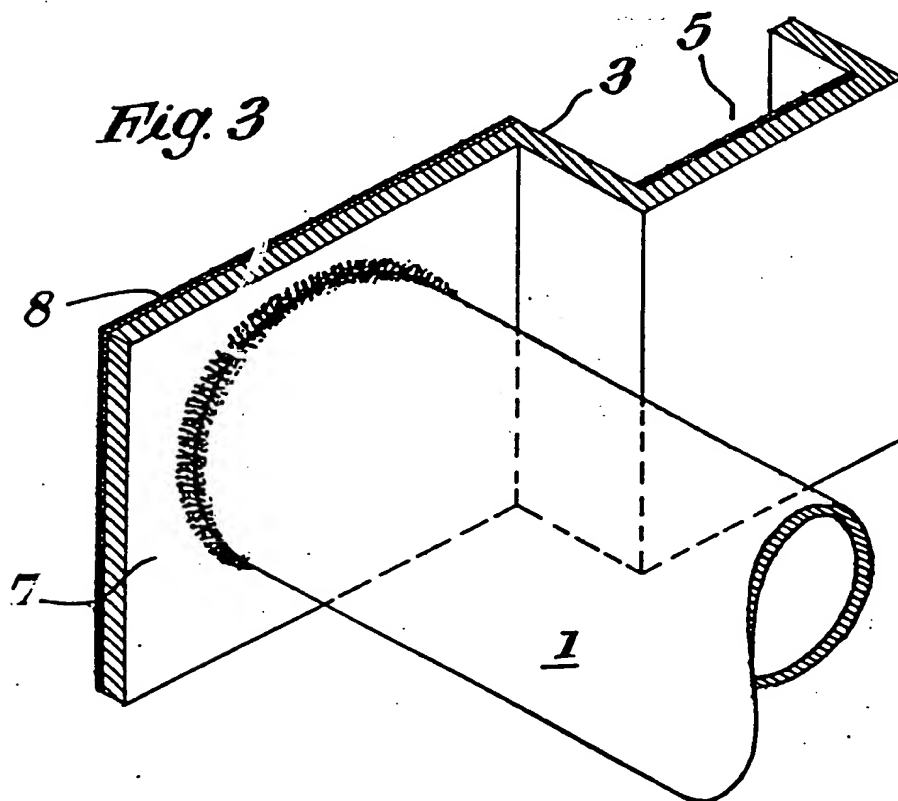
The device also includes a harness with a length of rope attached thereto. The free end of the rope is provided with a clip and, in use, the workman passes the rope around the tubular member (1) and clips it back to the harness.



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*Fig. 2**Fig. 3*

## SPECIFICATION

## Improvements in or relating to safety devices

This invention relates to safety devices, and it is an object of the invention to provide a safety device for use by a window cleaner, decorator, or other workman who need to perform any operation on the exterior of a building in the vicinity of an upstairs window.

In order to reach the exterior of an upstairs window of a multistorey building, it is, at present, normal to use a ladder, scaffolding, or a cradle suspended from the top of the building. In some cases it is difficult or unsafe to use a ladder, and too expensive to use scaffolding or a cradle. In such cases, an attempt may be made to reach the exterior of the building through the window opening, but this procedure is frequently impractical and, at present, usually unsafe.

Accordingly, it is an object of the present invention to provide a simple safety device which can be installed rapidly in any window opening to enable a person to stand with safety on the window-sill, and have both hands free to carry out any work required.

From one aspect the invention consists in a safety device comprising: a jack capable of being expanded to fit between structural members of a building defining the sides of a window opening; a harness suitable for human wear; and a flexible member interconnecting the jack and the harness.

It is to be understood that, in use, the jack is initially fitted in position across the window opening from the interior of the building. The workman wearing the harness then fits a flexible member to the harness and to the jack, and climbs out through the window opening on to the window-sill. He can then adjust the length of the flexible member so that he can stand on the window-sill supporting himself from the jack by means of the flexible member.

The jack preferably includes a tubular member having a wall-engaging foot at one end, and an opening at the other end. The jack also includes a length of threaded rod having a similar wall-engaging foot at one end. The threaded rod is dimensioned to slide within the tubular member and has on it an internally threaded annular member, the dimensions of which are larger than the opening in the tubular member. Thus, if the threaded rod is inserted in the tubular member, the distance between the two wall-engaging feet can be adjusted by rotating the annular member on the threaded rod. Preferably the annular member is provided with a number of holes in its periphery to receive a tommy-bar or the like by means of which the member can be rotated on the threaded rod.

A device in accordance with the invention is particularly suitable for use in buildings having sash windows. In such cases, the window frame normally includes vertical flanges in which the two glazed panels are slidable. Normally the inner and outer vertical flanges are relatively substantial, while the central flange which is common to the

two channels is relatively narrow. Preferably each of the feet is shaped to engage the wall of the building defining the window opening and also the base of the outer channel. Accordingly it is shaped with a recess into which the outer flange of the window frame can fit. Preferably the part of the foot designed to engage the wall extends farther outwardly than the part designed to engage the channel so that, when the jack is extended, the majority of the force is applied by the feet to the walls of the building and not to the window frame. It is further to be understood that the friction between the wall-engaging part of each foot and the corresponding wall provides the main force, retaining the device in position when in use. However, engagement of the outer flange in the recess in each foot serves to position the feet while the jack is being extended, and also serves as an additional safety factor if insufficient pressure is applied by extending the jack.

The harness may be any well-known type of harness, for example, a shoulder harness or a waist harness.

The flexible member is preferably in the form of a length of rope having a clip fastening at at least one end thereof. If only a single clip is provided, the other end is preferably permanently fixed to the harness. In use, the rope is preferably wrapped a number of times around the tubular member, and the clip is fastened to a ring provided on the harness. It is to be understood that the length between the harness and the jack can be adjusted by the number of times the rope is wrapped around the tubular member.

Preferably the tubular member of the jack is provided with at least one hook designed to receive a bucket, paint pot, or the like, being used by the workman. The tubular member may also be provided with a ring into which one end of the rope can be clipped. However, as already mentioned, it is preferred that one end of the rope should be permanently fastened to the harness, while the other end is passed around the tubular member a number of times and then clipped back to the harness.

From another aspect the invention consists in any features of novelty, taken singly or in combination, of the device illustrated in the accompanying diagrammatic drawings, in which:—

Figure 1 is a plan view partly in section of a device in accordance with the invention in position in a window opening;

Figure 2 is a front elevation of the annular member used in the device illustrated in Figure 1; and

Figure 3 is a perspective view on an enlarged scale of the foot attached to the tubular member of the device illustrated in Figure 1.

The device illustrated includes a tubular member 1, and a threaded rod 2. Welded to one end of the tubular member 1 is a foot 3, and welded to one end of the threaded rod 2 is a foot 4. It will be seen that each of the feet is shaped to form a recess 5 designed to accommodate the

external bead 6 of a sash window frame. Each foot also includes a portion 7 covered with neoprene-rubber 8 designed to engage the wall 9 of the building.

- 5 An internally threaded ring 10 is provided on the threaded rod 2, and is designed to engage the open end of the tubular member 1. The ring 10 is formed with six radial drillings 11 which serve to receive a key or tommy-bar (not shown). If the key is inserted in one of the drillings 11, the ring may be rotated on the threaded rod 2, forcing the threaded rod out of the tubular member 1. Thus the device illustrated may be expanded to fit securely into the window opening defined by the walls 9. The ring 10 is preferably also provided with six axial holes 12, one of which may be used, for example, to receive a cord to which the key or tommy-bar is attached to ensure that it is not dropped after it has been used to tighten the ring. One of the other holes 12 may be used, for example, to receive a hook to which can be attached a paint-pot or bucket.

- As already stated, when a device in accordance with the invention is to be used for the safety of a window cleaner or decorator who needs to stand on a window-sill outside a multistorey building, the device is initially fitted into the window opening as shown in Figure 1. The workman puts on the harness with a length of rope attached thereto. The free end of the rope is provided with a clip. The workman passes the rope once around the tubular member 1, and clips it back to the harness while he is still inside the building. He then climbs on to the exterior window-sill and, once there, can adjust the length of rope required by unclipping it from the harness, passing it the required number of times around the tubular member, and then clipping it back to the harness. He then has both hands free to carry out the required work.

- It is to be understood that a device in accordance with the invention may be used in other places than a sash window opening. For example, in a casement window opening, the device can be fitted inside the building with the feet pressed against the upright sides of the inner leaf of the wall. Alternatively, in the case of relatively low windows, the device may be positioned vertically in the middle of the window opening with one foot in engagement with the window-sill, and the other in engagement with the lintel or the top of the window frame.

- While a device as illustrated can be used in window openings of a number of different sizes, the wide variation in the width of window openings makes it impossible to accommodate all sizes with a single tubular member and threaded rod. Accordingly, it will be normal to supply a device in accordance with the invention with at least two tubular members, one of which is approximately double the length of the other.

It is to be understood that a device in accordance with the invention may be used to provide additional safety even when the window

- 65 opening is accessible by means of a ladder. In this case, a rope is fitted between the tubular member and an adjacent rung of the ladder after the ladder has been placed in position. Such a rope will be effective to prevent, or at least limit, any movement of the ladder and hence will reduce the danger to anyone using the ladder.

#### CLAIMS

1. A safety device comprising: a jack capable of being expanded to fit between structural members of a building defining the sides of a window opening; a harness suitable for human wear; and a flexible member interconnecting the jack and the harness.

2. A safety device as claimed in Claim 1, wherein the jack includes a tubular member having a wall-engaging foot at one end and an opening at the other end, and a length of threaded rod having a similar wall-engaging foot at one end.

3. A safety device as claimed in Claim 2, wherein the threaded rod is dimensioned to slide within the tubular member, and has on it an internally threaded annular member, the dimensions of which are larger than the opening in the tubular member.

4. A safety device as claimed in Claim 3, wherein the annular member is provided with a number of holes in its periphery to receive a tommy-bar or the like so that it can be rotated on the threaded rod.

5. A safety device as claimed in any of Claims 2 to 4, wherein each of the feet is shaped to engage a sash window frame which includes vertical flanges defining respective inner and outer channels in which two glazed panels are slidable.

6. A safety device as claimed in Claim 5, wherein each of the feet is shaped to engage the wall of the building defining the window opening, and also the base of the respective outer channel.

7. A safety device as claimed in Claim 6, in which each of the feet is shaped with a recess into which the respective outer flange of the window frame can fit, and in which a part of each foot designed to engage the wall extends further outwardly than the part designed to engage the channel so that, when the jack is extended, the majority of the force is applied by the feet to the walls of the building and not to the window frame.

8. A safety device as claimed in any of the preceding Claims, wherein the flexible member is in the form of a length of rope having a clip fastening at at least one end thereof.

9. A safety device as claimed in Claim 8, wherein only a single clip is provided at one end of the rope, and wherein the other end of the rope is permanently fixed to the harness.

10. A safety device as claimed in any of the preceding Claims, wherein the jack is provided with at least one hook designed to receive a bucket, paintpot or the like.

11. A safety device substantially as hereinbefore described with reference to, and as illustrated in, the accompanying diagrammatic

drawings.

12. Any features of novelty, taken singly or in combination, of the safety device as hereinbefore

described with reference to the accompanying  
5 diagrammatic drawings.

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